

CLAIMS:

1. A process for the manufacture of a colloidal suspension of an LTL zeolite, wherein a synthesis mixture having a composition, given in terms of molar proportions with the solid components being calculated in terms of their oxides, in the ranges:

$K_2O/(K_2O + Na_2O)$	from 0.33 to 1:1
$(K_2O + Na_2O)/SiO_2$	from 0.35 to 0.5:1
$SiO_2/Al_2O_3$	from 10 to 40:1
solvent/ $(K_2O + Na_2O)$	from 15 to 25:1

is subjected to thermal treatment at a temperature below 100°C for a time sufficient to form a colloidal suspension of an LTL zeolite.

2. A process as claimed in claim 1, wherein the  $SiO_2/Al_2O_3$  ratio is within the range of from 10 to 28:1.

3. A process as claimed in claim 1, wherein the  $SiO_2/Al_2O_3$  ratio is within the range of from 12 to 28.

4. A process as claimed in claim 1, wherein thermal treatment is carried out at a temperature within the range of from 40° to 97°C.

5. A process as claimed in claim 1, wherein thermal treatment is carried out for a time within the range of from 48 to 500 hours.

6. A process as claimed in claim 1, wherein thermal treatment is carried out for a time of at most 84 hours.

7. A process as claimed in claim 1, wherein the solvent is water.

8. A process as claimed in claim 1, wherein the colloidal suspension is washed with water until the wash water has a pH of from 9 to 12, if desired the zeolite is cation exchanged, and if desired calcined.

9. A process as claimed in claim 1, wherein the resulting zeolite has a composition of the Formula I



wherein M represents an exchangeable cation of valence n.

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10. Zeolite L of particle size less than 100 nm obtainable, and preferably obtained, by a process as claimed in claim 1.

11. A process for the manufacture of an LTL zeolite which comprises forming a synthesis mixture having a composition, given in terms of molar proportions with the solid components calculated in terms of their oxides, in the ranges:

$K_2O/(K_2O + Na_2O)$	from 0.60 to 1:1
$(K_2O + Na_2O)/SiO_2$	from 0.18 to 0.36:1
$SiO_2/Al_2O_3$ or $Ga_2O_3$	from 5 to 18:1
solvent/ $(K_2O + Na_2O)$	from 25 to 90:1

and also containing seed crystals of an LTL zeolite of particle size at most 100 nm, and subjecting the seed-containing synthesis mixture to a hydrothermal treatment at a temperature and for a time sufficient to form an LTL zeolite.

12. A process as claimed in claim 11, wherein the mixture comprises aluminum and the  $SiO_2/Al_2O_3$  ratio is within the range of from 5 to 15:1.

13. A process as claimed in claim 11, wherein the mixture comprises gallium, and the  $SiO_2/Ga_2O_3$  ratio is within the range of from 5 to 18:1.

14. A process as claimed in claim 11, carried out at a temperature within the range of 100°C to 180°C and/or for a time within the range of from 4 to 200 hours.

15. A process as claimed in claim 11, wherein from 0.005% to 0.10% by weight of seeds is employed, based on the weight of the synthesis mixture.

16. A process as claimed in claim 11, wherein the seeds have a particle size within the range of 60 to 80 nm.

17. A process as claimed in claim 11, wherein the solvent is water.

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18. A process as claimed in claim 11, wherein the resulting zeolite is washed with water until the wash water has a pH of from 9 to 12, if desired the zeolite is cation exchanged, and if desired calcined.
19. A process as claimed in claim 11, which is carried out with stirring, at least during heating the synthesis mixture to the hydrothermal treatment temperature.
20. Zeolite L whenever prepared by a process as claimed in claim 11.
21. The product of claim 20 in the form of a layer on a support.
22. The use, in a process for the thermal treatment of a synthesis mixture for Zeolite L, of a temperature below 100°C to obtain a colloidal suspension of Zeolite L, or to obtain particles of zeolite L having a greatest dimension of at most 100 nm.
23. The use, in the hydrothermal treatment of a zeolite-forming synthesis mixture, of a colloidal suspension of seeds of zeolite L to promote the crystallization from the synthesis mixture of a zeolite L-containing product, advantageously a product consisting essentially of zeolite L, and preferably a pure zeolite L product.
24. The use of zeolite L obtainable or obtained by the process of claim 11 in particulate or layer form, in hydrocarbon conversion, adsorption or separation.
25. Gallium-containing LTL zeolite formed of cylindrical crystallites having basal planes so shaped that the ratio of axial length of carved cylindrical surface to the overall axial length of the crystallites is greater than 0.9 and the aspect ratio of length to diameter is at most 0.5.
26. A process for the manufacture of a zeolite L-containing structure comprising a substrate and a zeolite L-containing layer, comprising applying to a face of the substrate a dispersion of zeolite L of particle size at most 100 nm to form an intermediate layer, and subsequently forming on the said face a zeolite L containing layer

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by crystallization thereon of zeolite L by hydrothermal treatment of a zeolite-forming synthesis mixture.

27. A process as claimed in claim 26, wherein the synthesis mixture is a porous gel when it is contacted with the said face.
28. A process as claimed in claim 26, wherein the substrate is pretreated with a barrier layer forming material before forming the intermediate layer thereon.
29. A process as claimed in claim 26, wherein the substrate is dry when the dispersion of zeolite L is applied thereto.
30. A process as claimed in claim 26, wherein the dispersion of zeolite L has a seed content of at most 1%.
31. A structure comprising a substrate, an intermediate layer, and an upper layer, the intermediate layer comprising zeolite L of a particle size of at most 100 nm, the upper layer comprising zeolite L particles, the particles of zeolite in the upper layer having at least one dimension greater than the dimensions of the particles of the intermediate layer.
32. A structure as claimed in claim 31, wherein the orientation of at least 75% of zeolite L particles is such that the 12-membered ring pores (the c-axis) lie within 30° of the perpendicular to the plane of the layer.
33. A structure as claimed in claim 32, wherein the orientation of at least 75% of the zeolite L particles in the upper layer is such that the c-axis of the particles lies within 5° of the perpendicular to the plane of the layer.
34. A method for the dehydrocyclization and/or isomerization of an aliphatic hydrocarbon comprising contacting the hydrocarbon at a temperature in the range of from 370°C to 600°C with a catalyst so as to convert at least part of the hydrocarbon into an aromatic hydrocarbon, the catalyst comprising a catalytically active metal

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anc gallium-containing LTL zeolite formed of cylindrical crystallites having basal planes so shaped that the ratio of axial length of curved cylindrical surface to the overall axial length of the crystallite is greater than 0.9.

35. A catalyst comprising a catalytically active metal and gallium-containing LTL zeolite formed of cylindrical crystallites having basal planes so shaped that the ratio of axial length of curved cylindrical surface to the overall axial length of the crystallite is greater than 0.9.

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